

## Sparassidae of China 3. First record of the genus *Bhutaniella* in China (Araneae: Sparassidae) with descriptions of two new species

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**Abstract** — Two new species of the genus *Bhutaniella* are described from China (Tibet and Yunnan Province): *Bhutaniella scharffi* sp. nov. (male holotype) and *Bhutaniella kronestedti* sp. nov. (female holotype). The new species belong to a genus previously known from a restricted area in the Himalayan region and exclusively from higher altitudes (950–2400). It is the first time that representatives of this genus are recorded from China. They extend the distribution range of *Bhutaniella* considerably to the east.

**Key words** — Taxonomy, zoogeography, Heteropodinae, Yunnan Province, Tibet

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### Introduction

The genus *Bhutaniella* was recently described by Jäger (2000): one known species formerly described in the genus *Heteropoda* was transferred to the new genus — *B. sikkimensis* (Gravely 1931) —, and one was newly described — *B. hillyardi* Jäger 2000, the type species. Jäger (2001) described four new species — *B. dunlopi* Jäger 2001, *B. rollardae* Jäger 2001, *B. haenggii* Jäger 2001, *B. gruberi* Jäger 2001. All species are distributed in a restricted geographic region of the Himalaya: East Nepal, North India (Sikkim) and West Bhutan. Individuals of *Bhutaniella* spp. are apparently less abundant than species of *Pseudopoda* Jäger 2000 and live only in higher altitudes. In this paper, the first records of this genus for China are presented.

All specimens are preserved in 70% ethanol. Epigyne was dissected and cleared afterwards with 96% lactic acid for a few minutes.

For diagnoses and descriptions of family, subfamily, genus as well as style of description see Jäger (1998, 2001). All measurements are in millimetres. Measurements of appendages are listed as: total length (femur, patella, tibia, metatarsus, tarsus). Arising point of embolus is given by means of left palp in a ventral view. In illustrations hairs are generally omitted, except for palpal spines. Abbreviations used: ALE — anterior lateral eyes, AME — anterior median eyes, CH AME — clypeus height at anterior median eyes, IOZ — Institute of Zoology, Academy of Sciences Beijing, PJ — subsequent number of Sparassidae examined by Peter Jäger, PLE — posterior lateral eyes, PME — posterior median eyes, RTA — retrolateral tibial apophysis, I, II, III, IV — leg I, II, III, IV. Peter Jäger thanks Prof. Dr. Shuqiang Li for his hospitality in Beijing and providing material as well

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### Taxonomy

Family Sparassidae Bertkau 1872  
Subfamily Heteropodinae Thorell 1873  
Genus *Bhutaniella* Jäger 2000

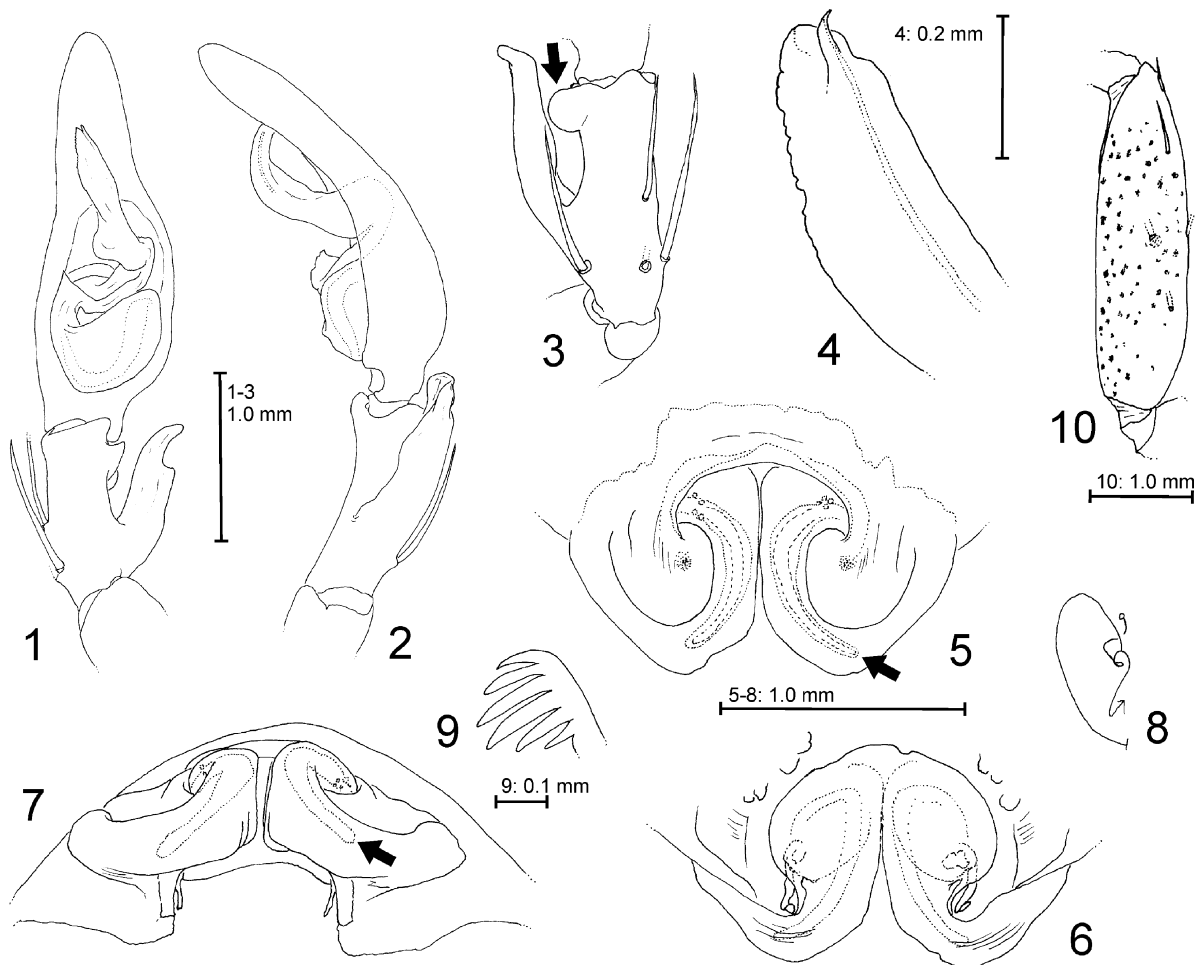
*Bhutaniella scharffi* sp. nov.  
(Figs. 1–4)

*Type material.* Male holotype (PJ 2156), with label: China, Yunnan Prov., Yingjiang Tongbi Guan Liu Ding, altitude 600–1100 m, 25.04.1995, Bi Long Yang leg. (IOZ).

*Etymology.* Dedicated to Dr Nicolaj Scharff for his work as curator of the Zoological Museum of the University of Copenhagen. Noun in genitive case.

*Diagnosis.* Medium-sized spiders. The species is closely related to *B. dunlopi* and *B. rollardae* and may be recognized by the following combination of characters: 1. Distal embolus simple, running straight (Fig. 1; bent and more complex in *B. dunlopi* and *B. rollardae*), 2. distal tibia of palp with retrolatero-dorsal protrusion (Fig. 3: arrow), 3. Distal part of RTA pointing retrolaterally in ventral view (Fig. 1).

*Description.* Prosoma length 5.1, height of dorsal shield of prosoma 2.1, prosoma width 4.8, anterior width of prosoma 2.4, opisthosoma length 5.2, opisthosoma width 2.9. Eye diameters: AME 0.24, ALE 0.39, PME 0.35, PLE 0.4. Eye interdistances: AME-AME 0.15, AME-ALE 0.05, PME-PME 0.12, PME-PLE 0.37, AME-PME 0.32, ALE-



**Figs. 1–10.** 1–4 *Bhutaniella scharffi* sp. nov., male holotype. 1 Left palp, ventral view; 2 left palp, retrolateral view; 3 left palpal tibia, prolatero-dorsal view, showing retrolatero-dorsal protrusion (arrow); 4 embolus, retrolatero-ventral view. 5–10 *Bhutaniella kronestedti* sp. nov., female holotype. 5 epigyne, ventral view, showing appendages of internal duct system (arrow); 6 vulva cleared, dorsal view; 7 epigyne, posterior view, showing appendages of internal duct system (arrow); 8 schematic course of female internal duct system, dorsal view; 9 palpal claw, prolateral view; 10 tibia I, prolateral view.

PLE 0.31, CH AME 0.56, CH ALE 0.42.

Leg formula: 2413. Spination: palp 131, 101, 2101; femur I–II 323, III 322, IV 331; patella I–III 101, IV 001; tibia I–II 2128, III–IV 2126; metatarsus I–II 1014, III 2024, IV 3036. Measurements of palp and legs: palp 7.8 (2.2, 1.1, 1.6, –, 2.9), I 25.3 (6.3, 2.7, 7.6, 6.5, 2.2), II 27.8 (7.2, 3.0, 8.2, 7.1, 2.3), III 18.4 (3.1, 2.3, 6.0, 5.2, 1.8), IV 25.5 (7.2, 1.8, 6.8, 7.5, 2.2).

Palp as in diagnosis. Embolus arising from a 9-o'clock-position on the tegulum, distally serrated and with an apophysis, the latter with the opening of sperm-duct (Fig. 4). Conductor as remnant hidden behind embolus' base. Sperm duct U-shaped. RTA arising basally from tibia (Figs. 1–2).

Colour: Reddish-yellow without distinct pattern. Fovea slightly darker. Sternum brighter than dorsal shield of prosoma. Appendages with same colour as dorsal shield of prosoma, with small spots predominantly on ventral femur. Spine patches weak, basal tibia with dark patch. Dorsal opisthosoma dark, with bright median longitudinal patch in

anterior part. Ventral opisthosoma with darker median patch, this becoming darker in front of the spinnerets.

*Distribution.* Only known from the type locality.

***Bhutaniella kronestedti* sp. nov.**

(Figs. 5–10)

*Type material.* Female holotype (PJ 2155), with label: China, Tibet, Zayu County, Chayuxian town, 28.4°N, 97.4°E, 1800 m above sea level, 29.07.1980 (IOZ).

*Etymology.* Dedicated to Dr Torbjörn Kronestedt for his work as curator of the Swedish Museum of Natural History. Noun in genitive case.

*Diagnosis.* The species may be recognized by the following combination of characters: 1. Lobal pockets circular, 2. Appendages of the internal duct system much longer than in other congeners (Figs. 5, 7: arrows).

*Description.* Prosoma length 4.5, prosoma width 4.1, anterior width of prosoma 2.7, height of dorsal shield of prosoma 2.1, opisthosoma length 5.9, opisthosoma width

4.2. Eye diameters: AME 0.21, ALE 0.41, PME 0.31, PLE 0.38. Eye interdistances: AME-AME 0.17, AME-ALE 0.04, PME-PME 0.18, PME-PL 0.38, AME-PME 0.38, ALE-PL 0.36, CH-AME 0.48, CH-ALE 0.34.

Leg formula: 2413. Spination: palp 131, 101, 2121, 1014; femur I-III 323, IV 311; patella I 001, II-IV 101; tibia I 2026, II 1016, III 1026, IV 2026; metatarsus I-II 1014, III 2024, IV 3036. Measurements of palps and legs: palp 6.1 (1.7, 1.0, 1.4, -, 2.0), I 14.8 (4.2, 2.1, 4.0, 3.2, 1.3), II 15.9 (4.6, 2.1, 4.2, 3.7, 1.3), III 13.2 (4.0, 1.8, 3.5, 2.8, 1.1), IV 15.0 (4.5, 1.7, 3.8, 3.8, 1.2).

Genitalia as in diagnosis. Epigynal field slightly wider than long, without anterior bands. Lateral lobes separated over their whole length (Fig. 5). Vulva with continuous cover, without genital pockets (Fig. 6).

Colour: Dorsal shield of prosoma reddish-brown with fovea and radial bands darker. Sternum, coxae and chelicerae slightly yellowish-brown, without pattern. Appendages as dorsal shield of prosoma, becoming darker at the distal segments. Femur and tibia with dark spots predominantly on ventral femur. Dorsal part of the opisthosoma dark, with bright transversal patch in posterior half. Ventral opisthosoma brighter with a dark spot in front of spinnerets.

*Distribution.* Only known from the type locality.

### Discussion

Four species of the presently eight known have been described by both males and females (*B. hillyardi*, *B. rollardae*, *B. dunlopi*, *B. sikkimensis*). The latter species is not well recognisable due to illustrations of apparently non-conspecific specimens in Gravely (1931) and Sethi & Tikader (1988) and therefore excluded from the following considerations. One species has been described only by males (*B. scharffi* sp. nov.), and three species have been described exclusively by females (*B. kronestedti* sp. nov., *B. gruberi*, *B. haenggii*). Although the number of species and specimens is low and thus the following observations have to be considered carefully, we would like to point to some features striking. More species in both sexes are necessary to support these considerations.

Male palps from three species (*B. scharffi* sp. nov., *B. rollardae* and *B. dunlopi*) can be grouped within *Bhutaniella* due to their similar structure (for comparison see Jäger 2001: figs. 54a-c, 55a-c). They possess an embolus which is divided into two distinct parts: a basal one with a prolateral tooth-like structure and a distal one which is more complex and bent. Moreover these three species exhibit a longer RTA than *B. hillyardi*. Based on these three examples, palps appear to become the more complex the higher the altitude. This trend is visible externally (distal part of the embolus) and internally (longer sperm ducts; a feature known from species of the genus *Heteropoda* Latreille 1804, Jäger unpubl.). *B. scharffi* sp. nov. shows the

simplest embolus and its sperm ducts run parallel to the tegular margin. The holotype was found between 600–1100 m altitude. *B. dunlopi* exhibits the most complex structure at the distal part of the embolus and the sperm duct is running sinuously. Specimens of the latter species were found, so far, up to 2400 m. In between these two extreme shapes and altitudes, an intermediary form of the embolus and the sperm duct is present in *B. rollardae* (2100 m). This trend of male palpal structures becoming more complex with higher altitude can also be noticed in *Pseudopoda* (Jäger 2001).

Within the group of *B. scharffi* sp. nov., *B. rollardae* and *B. dunlopi*, the new species is characterised by its retrolatero-dorsal protrusion, which is unique among all Sparassidae and which function is unknown.

Referring to the zoogeographical distribution of *Bhutaniella* species, complex palp structures are present in the western part of the distribution range (west Bhutan and east Nepal). The species with simpler palp structures (*B. scharffi* sp. nov.) was found in the more eastern part. A similar trend was observed in the *martensi*-group within *Pseudopoda* by Jäger (2001). Shorter and simpler emboli were present in species found on the eastern part of their distribution range.

No general evolutionary trend can be found in epigynes, which correlates to altitude or to geographical range. The appendages of the internal duct system seems to be a product of evolutionary lengthening, but sample size is too small to make general statements. Body size is relatively homogeneous in *Bhutaniella* and cannot act as diagnostic character.

The addition of the two new species *B. scharffi* sp. nov. and *B. kronestedti* sp. nov. extends the range of the genus to the east and potentially also to lower altitudes (*B. scharffi* sp. nov. 600–1100 m). More species are expected in the region between the central Himalaya and Yunnan Province.

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